

WHAT IS CLAIMED IS:

- 1 1. A system for displaying a three-dimensional image of an organ or
2 structure inside the body, the system comprising:
3 a processor configured to be communicatively coupled to a probe, the
4 probe being configured to be located in or adjacent to the organ or structure inside the
5 body;
6 memory coupled to the processor and configured to store image data
7 pertaining to the organ or structure inside the body; and
8 a three-dimensional display coupled to the processor and configured to
9 simultaneously display the three-dimensional image and a representation of the probe.
- 1 2. The system of claim 1, wherein the representation of the probe is
2 registered with the three dimensional image of the organ or structure inside the body.
- 1 3. The system of claim 1, wherein the representation of the probe is
2 registered with the three dimensional image of the organ or structure inside the body
3 using a localization system.
- 1 4. The system of claim 1, wherein the organ or structure inside the body
2 is a heart.
- 1 5. The system of claim 1, wherein the probe is a catheter.
- 1 6. The system of claim 1, wherein the system is an electrophysiology
2 system.
- 1 7. The system of claim 1, wherein the image data is acquired prior to the
2 probe being positioned inside the body.
- 1 8. The system of claim 1, wherein the image data is acquired during the
2 image-guided intervention procedure using an internal medical imaging device.

1 9. The system of claim 1, wherein the system is further configured to
2 display a map of the electrical properties of the organ or structure inside the body.

1 10. The system of claim 1, wherein the system is further configured to
2 display historical data related to the organ or structure inside the body.

1 11. The system of claim 1, wherein the system is further configured to
2 display auxiliary data related to an image-guided interventional procedure.

1 12. The system of claim 1, wherein the display is further configured to
2 display visual navigational information related to an image-guided intervention
3 procedure.

1 13. The system of claim 1, wherein the three-dimensional display is a
2 spatial three-dimensional display.

1 14. A system for displaying a three-dimensional image of a heart, the
2 system comprising:
3 a processor configured to be communicatively coupled to a probe;
4 memory coupled to the processor and configured to store image data
5 pertaining to the heart; and
6 a three-dimensional display coupled to the processor and configured to
7 simultaneously display the three-dimensional image of the heart and a representation
8 of the probe.

1 15. The system of claim 14, wherein the representation of the probe is
2 registered with the three dimensional image of the heart.

1 16. The system of claim 14, wherein the representation of the probe is
2 registered with the three dimensional image of the heart using a localization system.

1 17. The system of claim 14, wherein the system is an electrophysiology
2 monitoring system.

1 18. The system of claim 14, wherein the probe is a catheter configured to
2 collect data representative of the electrical properties of the heart.

1 19. The system of claim 14, wherein the system is further configured to
2 display a map of the electrical properties of the heart.

1 20. The system of claim 14, wherein the three-dimensional display is a
2 spatial three-dimensional display.

1 21. A system for displaying a three-dimensional image of an organ or
2 structure inside the body, the system comprising:
3 a processor configured to be communicatively coupled to a probe, the
4 probe being configured to be located in or adjacent to the organ or structure inside the
5 body and to collect data representative of the electrical properties of the organ or
6 structure inside the body;
7 memory coupled to the processor and configured to store image data
8 pertaining to the organ or structure inside the body; and
9 a three-dimensional display coupled to the processor and configured to
10 display the three-dimensional image and a map of the electrical properties of the
11 organ or structure inside the body.

1 22. The system of claim 21, wherein the display is further configured to
2 simultaneously display a representation of the probe, wherein the representation of the
3 probe is registered with the three dimensional image of the organ or structure inside
4 the body.

1 23. A method of displaying a three-dimensional image of an organ or
2 structure inside the body, the method comprising:
3 acquiring a three-dimensional image of the organ or structure inside
4 the body;
5 registering a representation of a probe with the three-dimensional
6 image, the probe being located in or adjacent to the organ or structure inside the body;
7 and

8 simultaneously displaying a representation of the probe with the three-
9 dimensional image using a three-dimensional display.

1 24. The method of claim 23, further comprising displaying a map of the
2 electrical properties of the organ or structure inside the body.

1 25. The method of claim 23, wherein the organ or structure inside the body
2 is a heart.

1 26. The method of claim 23, wherein the probe is a catheter.

1 27. The method of claim 23, further comprising displaying visual
2 navigational information with the three-dimensional image and the representation of
3 the probe.

1 28. The method of claim 27, wherein the visual navigational information
2 includes changes in color indicate a proximity of the probe to a location or area of the
3 three-dimensional image.

1 29. A system for displaying a three-dimensional image of an organ or
2 structure inside the body, the system comprising:
3 memory configured to store a first set of image data pertaining to the
4 organ or structure inside the body;
5 a processor coupled to the memory and configured to be
6 communicatively coupled to an imaging device and a probe, the imaging device being
7 configured to generate a second set of image data pertaining to the organ or structure
8 inside the body, and the probe being configured to be located in or adjacent to the
9 organ or structure inside the body, the processor further configured to generate the
10 three-dimensional image using the first set of image data and the second set of image
11 data; and
12 a three-dimensional display coupled to the processor and configured to
13 simultaneously display the three-dimensional image and a representation of the probe.

1 30. The system of claim 29, wherein the system is configured to provide a
2 warning related to an image-guided interventional procedure.

1 31. The system of claim 29, wherein the system is configured to provide a
2 warning when the first set of image data differs from the second set of image data
3 according to a predetermined criterion.

1 32. The system of claim 29, wherein the system is configured to determine
2 a first estimate of the location of the probe and a second estimate of the location of the
3 probe and to provide a warning when the first estimate differs from the second
4 estimate according to a predetermined criterion.